

CLAIMS

1. An accumulator fuel system for an internal combustion engine having a plurality of engine cylinders, the fuel system including:

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an accumulator fuel volume (12; 112) for supplying high pressure fuel to one or more of a plurality of injectors (10), each of which is arranged to supply fuel to an associated one of the engine cylinders,

10 wherein the accumulator fuel volume (12; 112) is integrated within an engine component provided for a purpose other than that solely of an accumulator fuel volume for storing high pressure fuel.

15 2. The accumulator fuel system as claimed in claim 1, wherein the system includes a rocker shaft (32) upon which a rocker member is pivotally mounted, wherein the rocker member is arranged to control one or more inlet and/or exhaust valves of an associated engine cylinder and wherein the accumulator fuel volume (12) is integrated within the rocker shaft (32).

20 3. The accumulator fuel system as claimed in claim 2, wherein the rocker shaft (32) is provided with a first axially extending passage (46) for receiving a lubricating fluid and a second axially extending passage (48) defining the accumulator fuel volume (12).

25 4. The accumulator fuel system as claimed in claim 2 or claim 3, including the fuel injectors, wherein the accumulator fuel volume (12) is arranged to supply fuel at a first pressure level to one or more of the plurality of injectors (10), and

wherein each injector includes an additional pumping plunger (20) for pressurising fuel to a second pressure level higher than the first pressure level.

5. The accumulator fuel system as claimed in claim 4, including a first rocker member for controlling one or more engine cylinder inlet valves, a second rocker member for controlling one or more engine cylinder exhaust valves and a third rocker member (30) for transmitting drive to the pumping plunger (20) of the associated injector (10), wherein the first, second and third rocker members are pivotally mounted upon the rocker shaft (32).

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6. The accumulator fuel system as claimed in claim 4 or claim 5, wherein the rocker shaft (32) has a longitudinal axis which is arranged to extend substantially perpendicular to a longitudinal axis of the pumping plunger of (20).

15 7. The accumulator fuel system as claimed in any one of claims 4 to 6, wherein the injectors are electronic unit injectors (10).

20 8. The accumulator fuel system as claimed in any one of claims 4 to 6, wherein each injector is associated with an electronic unit pump for increasing fuel pressure to the second pressure level.

25 9. The accumulator fuel system as claimed in claim 1, wherein the fuel system includes an engine cylinder head (16) within which a plurality of engine cylinders are defined, and wherein the accumulator fuel volume (112) is an integral part of the engine cylinder head (16).

10. An accumulator for use in a fuel system of an internal combustion engine, wherein the accumulator is a rocker shaft (32) of the engine, the shaft (32) being

provided with a first axially extending oil passage (46) for lubricating oil and a second axially extending passage (48) defining an accumulator fuel volume (12) for high pressure fuel.